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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/658,148

09/09/2003

Hideo Kato

15682-003001

5423

26211 7590 04/01/2010  
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EXAMINER

MARTIN, ANGELA J

ART UNIT

PAPER NUMBER

1795

NOTIFICATION DATE

DELIVERY MODE

04/01/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/658,148 | <b>Applicant(s)</b><br>KATO ET AL. |  |
|                              | <b>Examiner</b><br>ANGELA J. MARTIN  | <b>Art Unit</b><br>1795            |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/8/10 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-13, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al., U.S. Pat. Application Pub. 2005/0112418, in view of Ooma et al., US 2005/0151954, and in further view of Guthrie et al., U.S. Pat. 5,009,968.

Roberts et al., teach a fuel cell stack comprising:

a solid polymer electrolyte fuel cell stack having a stacked body formed by stacking fuel cell units together and a pair of end plates sandwiching the stacked body therebetween (abstract; 0007; 0067); electrical heaters disposed near the ends of the stacked body or

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the end plates, respectively (0048); and a control unit which controls the power generation operation in the solid polymer electrolyte fuel cell stack (0015; 0021). A control apparatus for a fuel cell stack according to claim 1, wherein the fuel cell stack further includes a pair of terminal plates each of which is disposed between each of the end plate and one of the fuel cell units disposed at each end of the fuel cell stack (0007; 0048; 0067). A control apparatus for a fuel cell stack according to claim 1, wherein the control unit is adapted to execute the power generation operation in the fuel cell stack in order to supply electrical energy to the electrical heaters (0021). A control apparatus for a fuel cell stack according to claim 1, further comprising temperature sensors for measuring temperature of the fuel cell units, wherein the control unit is adapted to control the electrical heaters depending on the temperature of the fuel cell units measured by the temperature sensors (0031; 0039).

Roberts et al., do not recite control unit to operate electrical heaters.

Ooma et al., teach a fuel cell stack having uniform temperature (0054) , relative humidity (0054) and prevent surplus of water (0018-0021).

Guthrie et al., teach electrical heaters disposed near ends of stacked body (col. 2, lines 41-48).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Ooma et al., and Guthrie et al., into the teachings of Roberts et al., because Ooma et al., teach the advantages of providing a fuel cell stack having uniform temperature, uniform humidity, and no surplus of water (0021). Guthrie et al., teach, “electric heaters may be interposed in the insulation

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between the membrane and the pressure plate to form a thermal guard which keeps the end cells at the required cell operating temperatures. The insulation between the heaters and the pressure plate precludes high heat rates into the end plates which would cause them to distort excessively during heat up and cool down cycles. “ (col. 2, lines 41-48). Regarding the amendment of “to maintain a uniform temperature and uniform relative humidity across the fuel cell units and to prevent a surplus of water in the fuel cell units disposed near the end of the fuel cell stack”; these limitations depend on the programming of the control unit. When nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diamond v. Diehr*, 450 U.S. 175, 185-86, 209 USPQ 1, 8. (MPEP 2106.01 [R-6])

### ***Response to Arguments***

3. Applicant's arguments filed 8/31/09 have been fully considered but they are not persuasive. Applicant argues that the prior art of record, Guthrie et al., and Roberts et al., are non-analogous art. In response to applicant's argument that Roberts et al. and Guthrie et al. are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied

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upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the control apparatus is directed to the peripheral aspects of the fuel cell system (electrical heaters, water purging device, control unit), therefore the problems of the molten carbonate fuel cell should be the same as that of a solid polymer electrolyte fuel cell, and it would be obvious to control the heaters, purging device, and control units in either type of fuel cell.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Omoto et al., U.S. Pat. Application Pub. 2005/0112423 A1, teach purging in a fuel cell system when stopping operation of the power generation system. Ito et al., U.S. Pat. 5,302,471, teach electric heaters in end plates of fuel cell stack. Romanowski et al., U.S. Pat. 5,132,174, teach electric heaters adjacent to the end cells of fuel cell stack.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANGELA J. MARTIN whose telephone number is (571)272-1288. The examiner can normally be reached on Monday-Friday from 10:00 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJM  
/Angela J. Martin/  
Examiner, Art Unit 1795